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Environment, Health and Safety Assurance Systems Manual

Revision 3
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Environment, Health, Safety Assurance Systems Manual

Revision	Date	Changes
Rev. 0	Nov. 2012	New document
Rev. 1	Dec. 2012	Added information on appendix slides to be included in Management Reviews (documented in Appendix C)
Rev 2	Oct. 2014	Significant edit of document to add new requirements and guidance for program self-assessments (PSAs) and remove specific requirements for the corrective action governance board.
Rev 3	Sept. 2016	Refinement of PSAs to reflect experience from roll out of presentations and efficiencies of process incorporated. Modification of assurance plan requirements to integrate a graded-approach.

Note: The EHS Assurance Systems Manual replaces PUB-5344, the annual Environment, Safety and Health Assurance Plan, which was last published as Rev.9 in March 2011 and PUB-913E, Environment, Safety and Health Technical Assurance Program Manual, which was last published as Rev. 3 in June 2011.

1.0 Introduction

The Environment, Health and Safety (EHS) Division has established an internal assurance system to drive program improvements and to meet internal, and external requirements for assurance (as defined or discussed in UC Contractor Assurance System Description LBNL/PUB-5520, Integrated Environment, Safety & Health Management Plan LBNL/PUB-3140, Quality Assurance Program Description LBNL/PUB-3111, and DOE O 226.1B). This assurance system is one of three basic components of Berkeley Lab's Environment, Safety and Health (ES&H) assurance program. The other two institutional assurance components are division peer reviews, which are managed by the institutional Safety Advisory Committee (SAC) and division self-assessments, which are managed by the Office of Institutional Assurance & Integrity (OIAI). Outputs from these systems provide assurance to Berkeley Lab, the University of California (UC) and the Department of Energy (DOE) that Berkeley Lab's ES&H systems meet requirements, reduce risk to the environment, employees and the community, and support the Berkeley Lab mission.

This document describes the EHS Division assurance system.

2.0 Driving Philosophy

The main purpose of the EHS Division assurance efforts is to identify and prioritize areas for continuous improvement. The various types of assessments, surveys, inspections, interviews, etc. we do are not done simply to check off a box and to show others that these have been completed. They are done to gain insight into our programs and learn how we might be able to improve upon what we have in place.

We take a holistic approach to identifying risks with our assurance efforts. There are many ways a program may fail, so we look at risk from different perspectives. Is a program compliant? Do we have the right controls in place? Do we effectively communicate with stakeholders? Do stakeholders follow program requirements even when we are not watching? This approach gives us a more complete perspective on risks to our programs and helps us identify and prioritize the most effective improvements.

We include stakeholders and management in the process. All parties should understand the risks that exist and agree on the most effective ways to minimize those risks.

We value open communication. By communicating risks and improvement opportunities to management, they ensure resources are allocated properly and accept the level of residual risk where actions are not taken.

By proactively assessing our programs, we are able to identify risks before events occur or before outside assessments identify these risks for us. This allows Berkeley Lab to demonstrate we are managing our programs, and it helps build confidence with our stakeholders, management and the Department of Energy. To be clear, identifying and communicating risks is a good thing and expected by management.

We tailor the assurance efforts to the program. Inherent risk varies significantly between our programs, and the level of effort and rigor needed to assure strong performance should vary accordingly.

3.0 Goals and Objectives

The goals of the EHS Division assurance system are to:

- Ensure that ES&H systems are effective, improving over time, complying with their guiding regulations, and properly implemented by Berkeley Lab divisions at the activity level
- Identify and manage issues on a risk-based, graded-approach
- Identify trends and resolve deficiencies
- Monitor the effectiveness of controls and work performance
- Promote continuous improvement
- Communicate performance to key stakeholders and provide them with information to make informed management decisions

4.0 Roles and Responsibilities

EHS Division Director

- Ensures necessary resources are available to implement the EHS assurance system
- Approves independent assessments and ensures funding for these assessments
- Identifies (with EHS management input) top risks within the division for periodic performance reports
- Supports decisions made during management reviews to drive continuous improvement including tracking issues to completion and allocating needed resources

EHS Management

- Provides the necessary support and resources to ensure efficient and effective implementation of the independent assessments and program self-assessments (PSAs)
- Reviews and concurs with program assurance mechanisms
- Approves, in coordination with the EHS Assurance Manager, the use of personnel other than a program's assigned SME to conduct a self-assessment
- Directs improvement actions based on program self-assessments and other assessments
- Communicates expectations with SMEs, including potential inclusion in annual performance goals
- Supports efforts to drive continual improvement including the allocation of any additional needed resources
- Recommends inclusion in (or exclusion from) program self-assessments as needed

- Provides input on top risks for the periodic performance reports
- Allocates resources for tracking emerging concerns from assessments to ensure feedback and improvement issues are subsequently implemented

EHS Assurance Manager

- Manages the EHS Assurance Systems
- Oversees and coordinates scheduling of Independent Assessments
- Maintains and coordinates management reviews
- Supports management and SMEs, as needed
- Compiles periodic performance reports
- Tracks resultant issues that require compliance/closure from PSAs

Subject Matter Experts (SME)

- Document assurance mechanisms for assessing programs under their responsibility
- Assess programs under their management
- Maintain documentation of these assessments
- Identify risks to their program
- Identify and prioritize opportunities for improvement
- Prepare program self-assessment summaries and present management reviews as scheduled
- Implement program improvements including specific objectives and targets as directed by EHS Management
- Submit findings, institutional findings and corresponding corrective actions into the LBNL Corrective Action Tracking System (CATS)
- Track and periodically update progress on higher priorities improvements
- Address deficiencies as they are identified
- Address any adverse trends or recurring deficiencies
- Ensure that corrective actions are properly managed
- Provide assistance during independent assessments, when requested

5.0 Independent Assessments

Independent assessments are comprehensive reviews of individual programs or specific areas of interest that are conducted over a short period of time. The goals of the independent assessments are to drive improvements and to meet external regulatory requirements for assurance [specifically DOE O 226.1B, Attachment 1, 2b(1); DOE O 414.1D Admin Chg 1, Attachment 2(10)].

On an annual basis, EHS management identifies independent assessments that will occur over the following year. Inherent risk associated with a particular program is one factor used to prioritize selection of independent assessments along with input from key stakeholders such as BSO, UCNL and DSCs. In some situations, independent assessments are selected because the

assessments are required to maintain a certification or are mandated by regulation or contractual requirement. Independent assessments identified by EHS management are added to the "Integrated Assessment Schedule" managed by OIAI.

Independent assessments are designed to identify weaknesses and non-conformances using unbiased persons in the subject area. They will typically include a review of the program itself as well as supporting documents and a sampling of implementation in the field. The exact number of assessments is decided by EHS management, but is typically in the range of 3 to 4 assessments per year. "Independent" means the assessment is led by someone who does not have direct responsibility in the area being assessed and could include consultants, staff from other DOE laboratories and other staff within Berkeley Lab with sufficient knowledge of the subject area.

5.0 Program Self-Assessments

Program self-assessments (PSAs) are subject matter expert (SME)-driven reviews and assessments of the programs under their management. Although SME-driven, this should be a collaborative effort with feedback and input from affected stakeholders. The goals of the PSAs are to identify and communicate risks, prioritize areas for continuous improvements to reduce risk and to meet external regulatory requirements for assurance [specifically DOE O 226.1B, Attachment 1, 2b(2)].

> Note: This manual discusses risk and the general goal of reducing risks to program. Risk has many different definitions and interpretations. OIAI has one definition of risk in LBNL/PUB-5519, Rev. 0, Issues Management Program Manual. It defines risk as "*The possibility of suffering a loss or an unfavorable event, or the failure of achieving a planned outcome. Risk in this context is defined as the product of the (i) probability (or frequency) of the event occurring and (ii) magnitude of its impact (or consequence) should the event occur*." EHS acknowledges that there are many different types of risks, and there are many ways a program may fail. EHS has developed "performance measures" discussed in Appendix C of this document that are designed to evaluate and think about risk from various different perspectives, similar to OIAI's consideration of different risk elements.
>
> Do programs meet compliance requirements? Are effective controls in place and used? Is there active and effective communication between EHS and stakeholders? Are employees following requirements even when EHS or management is not looking? Strong performance in these and other performance measure areas give more assurance that a program is healthy.

EHS takes a graded approach to PSAs. The graded approach depends upon the program, the complexity, compliance requirements and risks involved. Through the PSA process, SMEs are expected to plan and execute reviews or assessments necessary to collect sufficient data about their programs to meet any specific compliance requirements, to determine how well programs are working, and to determine what additional improvements are needed or desirable.

In some cases, some or all of this may be achieved through regular reviews by outside agencies. In other cases, this may require detailed plans outlining assessments that will occur over multiple years. Typically, less structure and rigor is needed for lower risk programs, while more structure and rigor is needed for higher risk programs. For example, the approach to the PSA for the Drinking Water Program does not need to be as rigorous as the PSA approach for the Electrical Safety Program.

There are several deliverables associated with the PSA process discussed in detail in Appendix A. The starting point is documenting assurance mechanisms. These are the surveys, interviews, assessments, field observations, document reviews, etc. used to monitor a particular program. Keep in mind, the goal is to assure that sufficient data about the program is collected to meet regulatory requirements, to identify strengths, weaknesses, opportunities and threats and rank performance measures, and ultimately to identify the most effective opportunities for improvement. Documented assurance mechanisms can be as simple as a bulleted list of reviews that are performed, or it may be a detailed plan identifying what aspects of the program will be reviewed and when. Line management must be in agreement with the documented PSA approach.

SMEs are responsible for keeping sufficient objective evidence to demonstrate that reviews and assessments have been completed. SMEs are also expected to periodically summarize and provide their findings to management. As part of this, SMEs are expected to prioritize the opportunities for improvement. It is also expected that stakeholders have been consulted to help ensure that planned improvements reflect the priorities of Berkeley Lab.

Appendix A – D provide additional information and example templates related to PSAs.

6.0 Communication

There are several methods EHS uses to communicate risk and assurance-related information.

PSA Summary

Periodically, as requested by management, SMEs will develop presentations that summarize assurance-related activities and provide or present this to EHS management and key stakeholders. The goals of these summaries are to communicate assurance efforts, program performance (through the SWOT and performance measures), actions taken to address risk, and prioritized recommendations for future improvement. These summaries also help to meet external regulatory requirements for assurance [including DOE O 226.1B, Attachment 1, 2b(2), 2b(4) and 2b(5); DOE O 414.1D Admin Chg 1, Attachment 2(9)].

These summaries are high level overviews of individual EHS programs based on self-assessment results and any other feedback collected over the past review period. The summaries are intended to share what about the program is working, what is not working and what are the opportunities for improving the program. This will typically include a rating for seven performance measures (Appendix C) EHS has developed, and a strength, weakness,

opportunities and threat (SWOT) matrix (Appendix D). The main emphasis however is on opportunities for improvement and progress made on improving the program.

Management reviews, where SMEs present information to management, are scheduled periodically for most EHS programs. A schedule for reviews will be maintained by the EHS Assurance Manager. These reviews are an opportunity for SMEs to discuss the performance of their program with EHS management, and they provide an opportunity for EHS management to provide feedback and guidance directly to the SMEs. Outputs from these meeting may include decisions and actions related to changes to the EHS programs or new objectives or targets consistent with the commitment to continual improvement. The content expected in the Management Review Summary is discussed further in Appendix E. A PowerPoint template is available.

Operations and Performance Reports

EHS prepares a variety of reports communicating assurance, risk, and improvement-related information. On a biannual basis the EHS Division, working with OIAI, Berkeley Site Office (BSO) and UC, prepares a performance report that documents current top risks to Berkeley Lab along with mitigation efforts, performance against strategic initiatives and objectives, performance against Berkeley Lab's Performance Evaluation and Measurement Plan (PEMP) and noteworthy accomplishments. EHS, OCA, BSO and UC provide input into this performance report and agree on the final document, including top risks. This information is presented to Berkeley Lab's Chief Operating Officer (COO), the head of BSO and upper management at UC.

In addition to the biannual performance reports, EHS communicates risks and mitigation efforts through monthly quad charts presented to the COO and the risk registry.

7.0 Outcome and Resolution Tracking

Findings from self-assessments will be managed in accordance with Berkeley Lab's Issues Management Program (PUB-5519). Observations and opportunities for improvement made by SMEs need to be evaluated and ranked for resolution. Some are simple and straightforward and will be initiated and completed by the SME directly with little guidance. Others may be complex, interfacing with other programs across multiple organizations and requiring significant resources to resolve. These issues will be shared with management and risk-ranked. Management will make decisions about actions to take, and high priority issues will be monitored.

8.0 Metrics and Targets

EHS generates periodic metrics and includes these in the biannual assurance reports and monthly quad charts to help communicate risk, performance and improvement information. Where required, these also help meet external regulatory requirements for assurance [specifically DOE O 226.1B, Attachment 1, 2b(6); DOE O 414.1D, Attachment 2(9)].

Appendix A: Program Self-Assessment Guidance for SMEs

SMEs are responsible for assessing programs under their oversight through the program self-assessment process. SMEs are responsible for the following deliverables in this process:

Deliverable 1 – Documented Program Self-Assessment (PSA) Assurance Mechanisms

SMEs will identify the mechanisms used to collect information about their program and identify risk. For higher risk programs or more complex programs, this may be a comprehensive assessment plan. For lower risk or less complex programs, this may be a list of actions (e.g., periodic surveys, stakeholder interviews, document reviews, etc.) completed over the course of a year such as hosting periodic stakeholder meetings, performing periodic audits/surveys/inspections and periodically interviewing workers.

When identifying assurance mechanisms, SMEs should think about what they want to know about a particular aspect of their program and tailor their efforts so the information they collect will help them answer those questions. For example, if an SME wants to know if training is effectively communicating information, one strategy (assurance mechanism) would be to talk with staff that have completed the training about the training and what they learned.

Assurance mechanisms must be documented and management must agree with the approach to be taken. In some cases, management may agree that a PSA is not necessary for a given program.

An example of a detailed PSA plan is provided in Appendix B.

Deliverable 2 – Objective Evidence of Assurance

SMEs are responsible for collecting and keeping sufficient objective evidence of their assurance efforts to demonstrate that these have been completed. This may include completed checklists, written notes, summary reports, inspection reports, etc.

Deliverable 3 – Program Ratings

SMEs will score their program against performance measures identified in Appendix C. These performance measures reflect a more holistic view of the program. Each performance measure will be assigned a green, yellow, red color (green for good, yellow for needs attention, and red for really needs attention). Assignment of colors is a subjective and collaborative activity involving management and stakeholders. SMEs will also identify the strengths, weaknesses, opportunities and threats (SWOT) associated with their programs (Appendix D). This should likewise be a collaborative effort with stakeholders.

The ultimate purpose of these efforts is to draw attention to areas in most need of improvement and to help prioritize improvements.

Deliverable 4 – Prioritized Opportunities for Improvement

SMEs will use assessment results to identify areas of the program that should be improved. SMEs will identify and prioritize recommendations for improvement. SMEs should consult with managers, customers and stakeholders to ensure different perspectives are represented and that EHS priorities match the priorities of the broader Berkeley Lab community to the appropriate extent.

EHS management is ultimately responsible for directing and supporting program improvements.

Deliverable 5 – Periodic PSA Summary/Management Review

SMEs will periodically summarize assurance information and provide this information to EHS management for review (see Appendix E for topics). This may be a written document only, or it may be a presentation to management or both.

Appendix B: Program Self-Assessment Plan (Example Template)

Program/Subject Matter			
Inherent Risk			
Assessment Cycle			
Subject Matter Expert			
Revision			
Revision History	Rev. #	Date	Brief Description

Program Weaknesses

Guidance: Start with known or perceived weaknesses. Assurance efforts should focus on these areas of known or perceived weakness.

There are several methods SMEs can use to identify the known or perceived weaknesses.

a. SMEs can draw on their own knowledge of the program
b. EHS management can provide their input on known/perceived weaknesses
c. SMEs can collaborate with key customers and stakeholders and solicit their input
d. SMEs can review existing data sources like Division Self-Assessments, DOE assessments, and independent assessments to see what issues are reported
e. SMEs can review CATS, lessons learned, and similar resources to identify potential weaknesses
f. SME is aware of the regulatory driver of the program and can explain how the program is implemented in terms of compliance to the rules/order

Focus Area, Drivers and Critical Indicators

Guidance: Identify the areas of the program that will be assessed over the span of the self-assessment cycle.

To do this, SMEs should break down each program into its fundamental elements (e.g., training, work authorization, roles & responsibilities, etc.). Each element should be assessed at least once over the course of the program self-assessment cycle. Additional self-assessments may focus on weaknesses or on program interfaces where different organizations take on the management of some aspect of the program (for example, the program interface between the Regulator Shop and the Gas Safety Program). SMEs may find it useful to develop a high-level block diagram, swim-lane or similar diagram of the life-cycle of the hazard or control that is managed by the program to better identify the program interfaces.

For each focus area, identify the regulatory or contractual requirements, LBNL implementing documents and critical indicators. Critical indicators identify what an SME wants to know about that focus area at the end of the assessment or the "questions" SMEs are trying to answer with the assessments. Another way is to think about critical indicators is to consider these the measures of success for that particular program element.

Regulatory and Contractual Requirements:

1.
2.

Focus Areas for Self-Assessment	Program & Implementing Documents	Critical Indicators
1.	•	•
2.	•	•

Assessment Schedule

Guidance: Identify when elements of an EHS program will be assessed over what period of time (typically 3 to 5-years). Some elements will likely be assessed more frequently (quarterly, twice a year, etc.), while some will be assessed less frequently (annually, once an assessment cycle, etc.).

Focus Areas for Self- Assessment	Assessment Cycles Starts FYxx, Qx & Ends FYxx, Qx											
	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx	FYxx, Qx
1.												

2.												

Assessment Methodology

Guidance: For each focus area that will be assessed, describe the scope of the assessment, the methodology to be used and the lines of inquiry or general approach used to assess this area to collect sufficient information to answer the questions or statements for the critical indicators and to rate the program against the EHS performance measures.

Scope: In a few sentences, describe the breadth or boundaries of this self-assessment.

Focus Areas for Assessment: Identify the focus areas for assessment.

Methodology: Identify the methodology to be used to collect sufficient information to draw conclusions for this self-assessment.

Lines of Inquiry: Lines of inquiry are an ordering of questions so as to develop a particular argument. The particular argument the SMEs are to develop is answers to the critical indicators. When building the lines of inquiry, ask yourself what information needs to be collected to be able to answer with confidence the critical indicators.

The lines of inquiry should be open ended and not yes or no questions.

Methodology and Lines of Inquiry:

Focus Areas for Assessment	Methodology	Lines of Inquiry/Approach
1.	•	•

Appendix C: Performance Measures

Each program will evaluate their program against the seven performance measures that follow. These are scored on a three-point scale (green, yellow and red).

Compliance

This measure assesses the structure and performance of the program against applicable regulatory and contractual obligations. It seeks to answer is the program compliant. Rate according to:

Green	Substantive compliance
Yellow	Moderate non-compliances
Red	Significant non-compliances

Controls

This measure assesses the effectiveness of controls used to manage hazards associated with the program. It seeks to answer if we have the "right" controls in place for the hazard and whether or not those controls are effective. Rate according to:

Green	Agreement that controls are appropriate for the risk; Controls effectively mitigate/manage risk; No adverse events or incidents and few (if any) near misses
Yellow	Some agreement on appropriateness of controls; Higher level of control may be desirable and justifiable; Controls prevent injury and accident in most cases (low number of adverse events and/or near misses)
Red	Controls are inadequate or considered inappropriate by most staff, and/or do not effectively mitigate risk; High number of adverse events or near misses; Controls are usually an afterthought in the work planning process

Communication

This measure assesses communication related to the program. It seeks to answer whether or not communication about the program is reaching affected stakeholders and is effective. Rate according to:

Green	Requirements of the program including roles and responsibilities are well known by staff; Revisions to program requirements and expectations are known by staff; Predominantly positive feedback about communication of information
Yellow	A mix of positive and negative feedback about communication; Some staff well aware of requirements and changes, others not aware
Red	Requirements poorly understood; Staff unaware of program changes; Predominantly negative feedback about communication

Efficiency

This measure assesses the ability to meet the safety needs of the Lab with timely turn-around and adequate support for the users in a manner which minimizes the use of resources such as time and money. It is a subjective assessment of the amount of effort involved in implementing a program relative to the needs of the Lab and risks associated with the program. Rate according to:

Green	Very streamlined program, efficient processes; Resources appropriately allocated relative to risk
Yellow	Somewhat efficient, some inefficiencies exist; Resources modestly align with risk
Red	Lots of time and energy expended without sufficient value add; Resources allocated do not match risk

Safety Culture

This measure assesses the level of acceptance of the program in everyday use by the general lab population. It is a subjective assessment of the degree to which a program has been integrated into existing work flows and is accepted by affected stakeholders at Berkeley Lab. Rate according to:

Green	Highly integrated, highly engaged stakeholders, program aligned with stakeholder needs, stakeholders feel strong ownership of program, stakeholders are comfortable bringing forward issues, stakeholders are proactively communicating with SMEs, stakeholders are modeling behavior
Yellow	Moderately integrated, stakeholders periodically engaged, program aligned with most of stakeholder needs
Red	Not integrated into operations well, low stakeholder engagement, program not aligned with stakeholder needs

Trends and Forecasts

This measure evaluates any potential trends and assesses future resources that may be required to implement a change, prepare for an audit or address a changing need of the lab. Rate according to:

Green	No changes/challenges on the horizon; Evidence of a sustained positive trend and/or absence of a negative trend
Yellow	Modest changes/challenges on the horizon that can be managed in-house with existing resources; Evidence suggesting an emerging negative trend
Red	Significant changes/challenges on the horizon that will demand additional resources; Clear evidence of a negative trend

Feedback and Improvement

This measure evaluates feedback and feedback mechanisms in place to detect problems or issues, assessment and assurance findings and evidence of continuous improvement. Rate according to:

Green	Regular feedback/communication; Positive feedback; Automatic systems to detect problems/issues; Evidence of continuous improvement; Few or no assessment findings; Lessons learned incorporated into program as appropriate
Yellow	Intermittent/sporadic feedback; Mix of positive and negative feedback; Manual systems in place to detect problems/issues; Some evidence of continuous improvement; Some internally identified findings or externally noted observations
Red	No feedback/communication; Predominantly negative feedback; No feedback mechanisms; No review or monitoring of program implementation – no ability to detect problems/issues; No evidence of continuous improvement; Externally noted findings

Appendix D: SWOT Matrix

Each program will develop a "strengths, weaknesses, opportunities and threats (SWOT)" matrix. Strengths and weaknesses in the SWOT matrix are internal factors such as skills, resources, and assets available to the program, and opportunities and threats are external factors that a SME may not be able to control but may be able to influence or take advantage of.

Strengths

Characteristics of the program that aid in its success, such as:

- Knowledgeable, experienced stakeholders
- Established, accepted program
- Partnerships
- Effective feedback mechanisms
- Stakeholder engagement and participation
- Sufficient resourcing
- Effective documentation and data collection systems
- Reliability of data

Weaknesses

Program issues, either with requirements or implementation that may hamper success, such as:

- Lack of communication or feedback
- Gaps with regulatory requirements or program implementation
- Insufficient resourcing (or over-resourcing relative to risk)
- Inefficient systems
- Poor integration with existing work processes
- Unclear guidance (or poorly understood guidance)

Opportunities

Things that an SME may be able to capitalize on to improve the program, such as:

- Stakeholders interested in partnering
- Unexpected resource availability
- New technology or equipment
- Improved or more robust controls (following the hierarchy of controls)

Threats

A threat could be:

- New DOE orders or new consensus standards that require significant programmatic changes
- Loss of resources / funding shortfalls
- Stakeholders using workarounds or loopholes in the program
- Stakeholders unfamiliar or unknowledgeable of requirements
- Systems outside of EHS control that EHS relies on to control hazards (e.g., procurement restricted items list)
- Significant impacts on research / Lab mission

Appendix E: Management Review Summary

The management review summary is a simple PowerPoint presentation. It includes the following information:

1. Assurance mechanisms in place
2. Strengths, weaknesses, opportunities and threats matrix
3. Prioritized opportunities for improvement
4. Performance measures
5. Performance against past objectives
6. Prioritized opportunities for improvement

Assessment summaries should be vetted with line management, customers and stakeholders who provided input into the self-assessment efforts or actually participated in the self-assessments.

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